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VA research on **MULTIPLE SCLEROSIS**

Multiple sclerosis is a complex neurologic disease that affects the central nervous system, including the brain, spinal cord, and vision pathways.

ABOUT MULTIPLE SCLEROSIS

- In MS, the immune system attacks the myelin sheath, the fatty tissue that surrounds and protects nerve fibers, as well as the nerve fibers themselves. Damage from these attacks is called demyelination. When any part of the myelin sheath or nerve fiber is damaged or destroyed, nerve impulses traveling to and from the brain and spinal cord are distorted and interrupted, causing a wide variety of symptoms.
- Sometimes the myelin can repair itself and the MS symptoms go away after the immune attack. Over time, however, the myelin and underlying nerve fibers cannot recover and suffer permanent damage. The cause of MS is currently unknown.
- Symptoms vary depending on the location of the lesions in the brain and spinal cord. They may include tingling, numbness, painful sensations, slurred speech, and blurred or double vision. Some people experience muscle weakness, poor balance, poor coordination, muscle tightness or spasticity, tremors, or temporary or permanent paralysis. Problems with bladder, bowel, sexual function, or mood are also very common.

- Fatigue is a major concern for most people with MS, as are challenges with memory, attention, and concentration. Symptoms may come and go, appear in any combination, and be mild, moderate, or severe.
- Many symptoms—such as fatigue, insomnia, mood, cognition, mobility, spasticity, and bowel function—are very responsive to self-care lifestyle changes such as increased activity. In addition, medication therapies and other interventions are available to help manage MS symptoms.

VA RESEARCH ON MULTIPLE SCLEROSIS: OVERVIEW

- Medical care for Veterans with MS, whether or not their illness was service-connected, can include disease-modifying therapies, other medications, physical and occupational therapy, and other health care services and medical equipment.
- Current VA research includes investigations into the biology of MS; targets for intervention; impacts of spasticity; fatigue and fall management programs; health services and the care delivery to evaluate and improve mood

and fatigue; and telehealth interventions to improve access to care and symptom management, among others.

- VA's [Multiple Sclerosis Centers of Excellence](#) (MSCoE) are dedicated to furthering the understanding of MS and its impact on Veterans and developing effective treatments to help manage the disease and its symptoms. MSCoE-East is located in Baltimore, and MSCoE-West is jointly located in Seattle and Portland, Oregon.

- VA has also established a national integrated network of dedicated MS health care professionals for care and referrals within the VA health care system.

SELECTED MILESTONES AND MAJOR EVENTS

2003 – Founded the [Multiple Sclerosis Centers of Excellence](#)

2014 - [Determined](#) that military deployment to the first Gulf War was not a risk factor for developing MS

2017 - [Found](#) that high dosages of lipoic acid can significantly slow brain atrophy, reduce falls, and improve walking times in some MS patients

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2017 - [Identified](#) two cytokines (immune-system molecules) that may explain why some people develop progressive MS

RECENT STUDIES: SELECTED HIGHLIGHTS

A drug often prescribed for fatigue and other symptoms in MS was shown to be less effective than placebo, in a VA Portland Health Care System study. In a six-week pilot study, patients taking the stimulant methylphenidate performed worse on measures of fatigue, balance, and walking than those taking a placebo. Those on higher doses of methylphenidate also had more negative side-effects than the other group. ([Multiple Sclerosis](#), November 2017)

Elevated levels of two inflammation-related proteins are linked to progressive MS in males, according to a VA Portland Health Care System study. Males with progressive MS had higher levels of macrophage migration inhibitory factor and the related D-dopachrome tautomerase, compared with males with relapsing-remitting MS and females with MS. The results suggest that these two factors are

sex-specific disease modifiers, and that it may be possible to direct treatment to control them in men with a gene variation toward high expression of the proteins. ([Proceedings of the National Academy of Sciences of the USA](#), Oct. 3, 2017)

Implanted electrical stimulation improved walking in a patient with MS. Researchers with the Louis Stokes Cleveland VA Medical Center implanted a device to electrically stimulate the hip and knee flexors and ankle dorsiflexors in a patient with gait dysfunction due to MS. Thanks to the implanted electrodes, the patient was able to walk short distances. This case study supports further exploration into implanted pulse generators as a way to improve walking in patients with MS. ([American Journal of Physical Medicine & Rehabilitation](#), September 2017)

The antioxidant lipoic acid may prevent reductions in brain volume in patients with secondary progressive MS, found a VA Portland Health Care System study. Patients taking lipoic acid had a 68 percent reduction in percent change brain volume, compared with patients taking a placebo. Patients taking lipoic acid also had improved times on a walking test and fewer falls.

The drug showed favorable safety, tolerability, and compliance over two years. ([Neurology, Neuroimmunology & Neuroinflammation](#), June 28, 2017)

MS progression was consistently associated with low vitamin D levels and smoking, in a review by Washington DC and West Los Angeles VA medical center researchers. The review showed no link between MS progression and the use of epidural analgesics during childbirth. Insufficient evidence exists to draw conclusions about other risk factors for faster MS progression due to conflicting results. ([Multiple Sclerosis](#), April 2017)

Mental health comorbidities significantly contribute to secondary disability and detract from quality of life in people with MS. VA Puget Sound Health Care System researchers found that depressive disorders and symptoms are extremely common among individuals with MS. Anxiety disorders and symptoms contribute to MS disease burden to a lesser extent. The researchers recommend that routine screening for depression, including suicidality, should be part of ongoing management of MS. ([Current Neurology and Neuroscience Reports](#), December 2016)

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